

V. *A Supplementary Report on the Crustaceans of the Group Myodocopa obtained during the 'Challenger' Expedition, with Notes on other new or imperfectly known Species.* By G. STEWARDSON BRADY, M.D., LL.D., F.R.S.

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[PLATES XV.—XVII.]

SINCE the publication of my Report on the Ostracoda of the 'Challenger' Expedition I have received from Dr. John Murray and Professor G. O. Sars further specimens which were met with during the examination of other groups of Crustacea. All of them are pelagic species belonging to the group *Myodocopa*, and it is with Dr. Murray's approval that I record them here. In addition to the specimens so obtained, I am in possession of other undescribed or imperfectly known forms which have come into my hands at various times and which are of sufficient interest to make their further description desirable. Among these are some collected by my brother, the late Dr. H. B. Brady, F.R.S., among the South Sea Islands, and which were described by me a few years ago¹ in the 'Transactions' of the Royal Society of Edinburgh. At that time, however, I was unacquainted with the soft parts of many of the species, and was able to describe the shells only. Some of these descriptions I am now able to improve by the addition of anatomical details derived from the examination of macerated specimens.

OSTRACODA.

Section *MYODOCOPA*.

Family CYPRIDINIDÆ.

Genus *CYCLASTEROPE*, nov. gen.

The shell is more nearly spherical than is usual in *Asterope*. Frontal tentacle stout, 3-(or 2?)jointed. The first joint of the mandibular foot has a falcate masticatory process as in *Asterope*, but much more elaborately spinous; the second joint, instead of being produced backwards in an angular process, bears on its distal margin a large tongue-like appendage which extends as far as the extremity of the following joint. The last limb (vermiform foot) is very profusely armed with setæ, many of the segments bearing two or three on each lateral margin. In other respects the anatomy is that of *Asterope*.

¹ "On Ostracoda collected by H. B. Brady, Esq., LL.D., F.R.S., in the South Sea Islands," Transactions of the Royal Society of Edinburgh, vol. xxxv. part 11 (1888).

CYCLASTEROPE HENDERSONI, n. sp. (Plate XV. figs. 1-12.)

Shell of the female (figs. 1, 2) very tumid, subspherical: seen from the side broadly ovate; greatest height situated near the middle and equal to two-thirds of the length; anterior extremity somewhat narrowed in comparison with the posterior, which is broad and well rounded; the beak narrow, curved, and sharply pointed, notch very narrow; dorsal margin boldly arched, but towards the front flattened and rather steeply sloping; ventral margin evenly and gently convex. Seen from above the outline is subovate, wide in the middle and but slightly tapered towards the extremities, width nearly equal to the height; lateral margins strongly convex, anterior extremity rather abruptly narrowed, obtuse and slightly produced, posterior rounded. Surface of the shell smooth or but very slightly punctated; the anterior margin clothed with very small fine hairs; colour yellowish. Length 7 millim. Male unknown.

Frontal tentacle (fig. 3) stout, two-jointed, the basal joint short; apical joint twice as long, subclavate, constricted at the base, and slightly also in the middle, whence it tapers gradually to the extremity. Secondary branch of the antenna (fig. 4) two-jointed, geniculated, basal joint bearing several marginal setæ, distal joint one long ringed seta. The basal joint of the mandibular foot bears a falciform masticatory process the convex side of which is, towards the apex, divided into numerous very irregular processes (figs. 6-8), those at the apex being slender and falcate, the others broader, tooth-like, and marginally denticulated: below this series of processes the margin of the organ forms a flattened laminar flange which bears several transverse rows of spinules. The last pair of limbs ("vermiform feet") take the form, usual in Cypridinidæ, of flexuous hollow cylinders containing in the interior a spirally coiled chitinous thread: the free extremity (fig. 9) has four sets—two on each side—of spine-like teeth, and bears a vast number (about two hundred and fifty) of fine barbed setæ (fig. 10), which spring irregularly from the margins of the segments and are of various lengths, a single segment frequently having on each side three setæ of different sizes, others only one or two.

Each caudal lamina bears eight slender curved ungues, which increase progressively in length from the first to the last, the first four, however, being distinctly smaller and less robust than the rest (fig. 11); the concave margins of the ungues finely pectinated with lancet-shaped spinules (fig. 12). In the intervals between the third, fourth, fifth, and sixth ungues are attached small marginal setæ about one-third as long as the ungues themselves: the abdominal margin in front of the ungues is densely hispid.

The eyes consist of subreniform black pigment-masses about which numerous simple convex lenses are clustered in regular rows; a delicate capsule invests the whole structure, and is continued over a peduncle in which are contained muscles for the movement of the eye as well as numerous nucleated (nerve?) cells. The whole organ lies loosely within the shell and has no attachment to the body of the animal

except by its peduncle. There are seven pairs of laminar branchiæ, and in all essential particulars the anatomy is that of *Asterope*.

I have pleasure in naming this fine species after Mr. Henderson of the Christian College, Madras, to whom I am indebted for numerous specimens.

The species was dredged by Mr. Henderson in Madras Harbour in a depth of 4-5 fathoms.

CYCLASTEROPE ORBICULARIS, n. sp. (Plate XV. figs. 13-19.)

Female.—Shell rather thin, subspherical (figs. 13, 14): seen from the side almost circular, height equal to five-sixths of the length; beak short and sharp; rostral notch narrow and moderately deep, situated quite in the middle of the anterior margin; seen from above the outline is regularly ovate, tapering a little towards the posterior extremity, which is evenly rounded off, and more considerably to the front, which is somewhat obtuse. Anterior margins of the shell fringed with short fine hairs; surface smooth; colour light brown. Frontal tentacle (fig. 15) three-jointed; the second joint short, last joint elongated, conical. Secondary branch of the antenna three-jointed (fig. 16); first joint broad and fringed below with numerous fine hairs, second much more slender and bearing a single short marginal seta, third very small and ending in a single long ringed seta. The mandibular foot (fig. 17) is very similar to that of *C. hendersoni*, except that the falciform process (which having been broken was only partially seen) seems to be much smaller and less elaborately armed. Caudal laminæ (fig. 19) broad and short, bearing eleven marginal ungues, the first eight of which are merely slender closely-set curved setæ, nearly equal in length and slightly spinulose; the remaining three are very stout, strongly curved, and bear numerous marginal teeth, the first of them about as long as the preceding setæ, the second twice, and the third fully three times as long; abdominal margin in front of the lamina densely hairy. Length of the shell 2·7 millim.

I have seen only one specimen of this species. It bears the inscription "Valparaiso," without any further particulars; and I am not sure whether I had it from the Challenger' or from some other source.

Genus CYPRIDINA, Milne-Edwards.

CYPRIDINA ALBOMACULATA, Baird.

1880. *Cypridina albomaculata*, Baird, "Note upon the Genus *Cypridina*, Milne-Edwards," Proc. Zool. Soc. Lond., Annulosa, p. 201, pl. lxxi. figs. 1, 1a, 1b, 1c, 1d.

The type of this species is in the British Museum, and is stated in Dr. Baird's description to be from "Swan River,—from the collection of Mr. Cuming." The

single specimen which I possess was taken many years ago by Dr. Coppinger, of H.M.S. 'Alert,' in Dundas Strait, N.W. Australia.

CYPRIDINA CASTANEA, n. sp. (Plate XVI. figs. 1-4.)

Male.—Shell corneous, flexible, dark brown, as are also the limbs of the animal. The rostrum is bordered by a thin scale-like flange, which is strengthened below by several stout spines; the convexity of the sub-rostral cleft has a fringe of numerous slender spines, which are long in the middle of the series and gradually smaller towards the ends; the shell-surface near the rostral angle has also an elevated hump to which are attached a number (about fifteen) of long, rigid setæ (fig. 1). Masticatory process of the mandibular foot bifid and bearing a long lateral seta (fig. 2). The antennules have two long apical setæ and several small sensory ones, and to two of the smaller of these are attached circular, saucer-shaped disks. The distal extremity of the first maxilla (fig. 3) bears numerous ciliated setæ, and four very stout spine-like teeth which have spinulose margins. Caudal laminae (fig. 4) provided with nine equidistant, slender, curved, and denticulated ungues, the last two of which are very long, the rest gradually decreasing in length to the first. Length of the shell about 7 millim.

One example only of this species was taken by the 'Challenger' Expedition in a "deep haul" from the Atlantic, lat. 32° 41' N., long. 36° 6' W., depth 1675 fathoms, 6th May, 1876. The specimen was much damaged, and neither the shell nor the soft parts were in a condition to be accurately examined. Provisionally, however, it may be referred to the genus *Cypridina*, though some of the characters show an approach to *Philomedes*.

CYPRIDINA BAIRDI, G. S. Brady. (Plate XVI. figs. 22, 23.)

1865. *Cypridina bairdii*, G. S. Brady, "On new or imperfectly known species of Marine Ostracoda," Trans. Zool. Soc. vol. v. p. 387, pl. lxii. figs. 7 a-m.

Of this species I have seen no specimens other than those on which the original description was founded. The squamous outgrowths of the shell in the neighbourhood of the beak (figs. 22, 23) are, however, somewhat similar to those of *C. castanea*, with which the soft parts also agree so far as they have been examined. It is probable that a fuller knowledge of the two forms may show other points of resemblance.

C. bairdii was taken in the tow-net, off Pescadores, China, by the late Mr. A. Adams.

CYPRIDINA JAPONICA, G. S. Brady.

1865. *Cypridina japonica*, G. S. Brady, *loc. cit.* p. 386, pl. lxii. figs. 8 a-d.

This would appear, from the imperfectly preserved specimen in my collection, to be rightly referred to the genus *Cypridina*.

Collected in Japan by Mr. A. Adams.

CYPRIDINA (?) ELONGATA, G. S. Brady.

1865. *Cypridina elongata*, G. S. Brady, *loc. cit.* p. 386, pl. lxii. figs. 9 *a-d*.

Respecting this species I am able to add nothing to the short description already published.

(?) CYPRIDINA PUNCTATA, Dana. (Plate XVI. figs. 5-9.)

1852. *Cypridina punctata*, Dana, Crustacea of U.S. Exploring Exped. p. 1293, pl. ix. figs. 2 *a, b*.

Three specimens only of a species closely similar to, if not identical with, Dana's *C. punctata* were taken by the 'Challenger' Expedition at some point, not accurately noted, in the Eastern Archipelago. All the three were in very bad condition—many of the limbs broken or absent. In no case have I been able to find the slightest trace of the vermiform limb.

Shell extremely thin and membranaceous: seen from the side (fig. 5) subovate, greatest height in the middle and equal to somewhat more than half the length, dorsal and ventral margins evenly arched, the dorsal having the larger curve; anterior extremity obliquely subtruncate, with a short wide beak, above which is a shallow sinuation, subrostral sinus narrow; posterior extremity produced below the middle into a rather wide, obtusely angular process, which is continuous with the ventral margin below, but is separated from the dorsal margin by an abrupt sinuation; seen from above the outline is ovate, with produced subacute extremities. The mandibular foot terminates in three short, equal ungues (fig. 7), which are slightly swollen at their bases; there is also a single slender curved seta, considerably shorter than the ungues; the masticatory process (fig. 8) is slightly bifid at the apex. Caudal laminae (fig. 9) having eight marginal ungues, the first three extremely small and weak, the rest successively increasing in length to the last; the fifth, sixth, and seventh ungues are not articulated to the limb but are simply processes of it. Length of the shell 1.5 millim.

CYPRIDINA DANÆ, G. S. Brady. (Plate XVI. fig. 24.)

1880. *Cypridina danæ*, Brady, Report on the Ostracoda of the 'Challenger' Expedition, p. 156, pl. xxxvi. figs. 2 *a-d*.

The head of the vermiform appendage, here figured, is peculiar, the upper portion being massive, strongly curved, and armed with a series of marginal teeth; the lower portion much smaller, and consisting of a simple, almost rectangularly curved process, wide at the base but slender beyond the middle.

CYPRIDINA (?) ARMATA, n. sp. (Plate XV. figs. 20, 21.)

Shell thin and membranaceous: seen from the side oblong, subovate, greatest height situated in the middle and equal to two-thirds of the length; dorsal and ventral

margins evenly arched; beak wide, obtusely pointed, notch deeply excavated; posterior extremity wide, produced in the middle into a broad, bifid prominence. Seen from above the outline is subpentagonal, with parallel and almost straight lateral margins, which in front of the middle converge sharply towards the subacute anterior extremity; posterior extremity very wide, scarcely narrower than the widest part of the shell, truncated, the outer angles forming two backward-pointing spines, obtusely mucronate in the middle. Surface of the shell smooth; behind the middle, on the lateral aspect of each valve, there is a very large, acutely lancet-shaped spine which points directly backwards, its point reaching almost as far as the hinder border of the shell; just within the dorsal margin, above the base of the larger spine, is a much smaller one of similar form, but pointing upwards. Colour brown, the spines almost black at their apices. Length 1.4 millim.

Animal unknown.

One specimen from a depth of 7 fathoms, Flinders Passage, Sept. 8th, 1874—'Challenger' Expedition.

CYPRIDINA (?) SQUAMOSA, n. sp. (Plate XVI. figs. 10-12.)

Shell very thin and membranaceous: seen from the side almost circular (fig. 10), the height equal to about three-fourths of the length; anterior extremity broadly rounded, the beak wide and almost rectangular, notch deep and narrow; posterior extremity rounded above the middle, below the middle forming a wide truncate prominence; dorsal and ventral margins boldly convex. Shell marked throughout with a reticulated pattern as of imbricated scales (fig. 11). Caudal laminae (fig. 12) bearing only three ungues, which are strongly curved, the first being very small, the second about thrice as long, and the third twice as long as the second. Length 0.9 millim.

One specimen only of this species has been noticed; it occurred in a gathering from the Eastern Archipelago the precise locality of which was not stated. Only fragments of the soft parts were recognizable, and its position as a *Cypridina* must be looked upon as provisional only.

Genus PHILOMEDES, Lilljeborg.

PHILOMEDES AGILIS, Thomson. (Plate XVI. figs. 13-16.)

1878. *Philomedes agilis*, Thomson, "On the New Zealand Entomostraca," Trans. New Zealand Institute, vol. xi. p. 257, pl. xi. fig. C. 8 a-e, D. 1 a-g.

Male.—Shell, seen from the side (fig. 13), oblong, ovate, greatest height in the middle and equal to about two-thirds of the length, beak obtuse and only slightly produced, notch very shallow, anterior extremity narrow and somewhat angular, posterior broad and well rounded; dorsal and ventral margins equally arched; the dorsal margin, especially in its posterior half, irregularly emarginate and presenting an

abruptly undulated outline. Seen from above, the outline is compressed, subclavate, sides nearly parallel but slightly converging towards the obtusely-pointed front; posterior extremity wide and subtruncate, greatest width considerably less than half the length. Surface of the shell covered with numerous subrotund pits and sparingly setose. Colour light brown. Eyes large and black. Length 1.9 millim.

Secondary branch of the antenna (fig. 14) three-jointed and strongly prehensile; basal joint short and bearing several setæ, one of which is long and plumose; second joint much elongated, and having two long setæ in the middle of the external margin; third joint also long, curved, with a denticulated external margin, a single long seta at the base, its apex rounded, crenulated, and slightly split up in a multifid fashion.

Apex of the vermiform appendage (fig. 15) having its upper process armed with five slender curved spines; lower portion rounded, obtuse, and toothless. Caudal laminae (fig. 16) bearing three principal unguis and six very small spine-like setæ: the first five setæ are quite minute, then follows a strong curved unguis of moderate size; a sixth small seta intervening between it and the following unguis, which is twice as long as the preceding; the last unguis is still longer and, like its neighbour, has a spinulose margin.

Female.—"Valves somewhat larger and much more circular in outline, with the beak small and very slightly produced; oral notch nearly rectangular; height about three-fourths of the length; easily distinguished externally from the male by the small size of the eye-spot. Eyes reddish."

I am indebted to Professor G. M. Thomson, of Otago, for specimens of this interesting species, which was taken by him "swimming actively in the rock-pools on the Taieri Beach." The specimens sent to me were all males. I have therefore quoted Prof. Thomson's description of the female shell.

PHILOMEDES CORRUGATA, n. sp. (Plate XVI. figs. 17-21.)

Shell very tumid: seen from the side (fig. 17) subrhomboidal, highest about the middle, height equal to two-thirds of the length; the dorsal and ventral margins markedly convex; anterior extremity narrowed and rather oblique, beak blunt and not very prominent, notch very shallow; posterior extremity evenly rounded. Seen from above (fig. 18), the outline is subpentagonal, greatest width situated behind the middle and equal to four-fifths of the length; the anterior margin is rounded off but extremely broad and almost subtruncate, the posterior margin slopes very abruptly and with an irregularly sinuous curve from the widest point, and terminates in a very broad obtusely rounded median process; the lateral margins converge very slightly and in sinuous fashion towards the wide anterior extremity. The surface of the shell is much wrinkled and pitted, and slightly hispid with short distant hairs. Colour reddish brown. Length 1.4 millim.

The sculpturing and general outline of the shell as shown in the lateral view (fig. 17)

are possibly to some extent incorrect owing to shrivelling of the specimen when taken out of the spirit. The soft parts of the animal, so far as they can be made out, do not differ materially from those generally belonging to the genus.

The first three natatory setæ of the female antenna are marginally spinous as in *Pleoschisma* (see figs. 3, 4, Pl. XVII.); so also is the first seta of the male antenna. The prehensile branch of the male antenna (fig. 19) is irregularly dentated on both margins. Caudal laminæ (fig. 20) armed with seven marginal setæ, four of which are unguiform and much stouter than the others; of these ungues the first is very short, the second about twice as long, the third twice as long as the second, and the fourth slightly longer than the third; three very short, slender, and nearly equal setæ are placed in front of the first unguis and in the spaces behind the first and second and second and third ungues.

Hab. One specimen (a male) of this species was found in a tow-net gathering from a depth of 2-10 fathoms, off Port Jackson, Australia; another (female) from a depth of 7 fathoms in Flinders Passage, Australia.

Genus PLEOSCHISMA, G. S. Brady.

PLEOSCHISMA MOROIDES, G. S. Brady. (Plate XVII, figs. 1-11.)

1888. *Pleoschisma moroides*, G. S. Brady, "On Ostracoda collected by H. B. Brady, Esq., LL.D., F.R.S., in the South Sea Islands," Trans. Roy. Soc. Edinb. vol. xxxv. p. 514, pl. i. figs. 23, 24.

"Shell, seen from the side, subcircular, height equal to three-fourths of the length. Anterior extremity wide, feebly rounded, almost flat, notch obsolete; posterior narrower, rounded, slightly sinuated above and below; dorsal and ventral margins moderately convex. Seen from above, broadly ovate, nearly equal in width throughout; extremities broad and rounded, the anterior rather the narrower of the two; lateral margins moderately arcuate; width equal to four-sevenths of the length. Surface of the shell minutely punctated, and in old specimens raised into circular bosses; colour dark brown. Length 1.2 mm."

Antennules, in both sexes, very similar to those of *Philomedes*: the sensory setiferous seta attached to the antepenultimate joint in the male is dilated at the base, and is setiferous on the outer side only (fig. 1). The antenna of the male is larger than that of the female, and the dilated basal joint is closely and delicately striated (fig. 2); the first and third joints of the natatory branch are very long, the relative lengths of the nine joints being approximately as follows: $\frac{1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6 \cdot 7 \cdot 8 \cdot 9}{18 \cdot 4 \cdot 14 \cdot 3 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 1}$; the secondary branch is strongly prehensile, its terminal joint curved, its concave margin deeply and irregularly indented, and its apex minutely crenulated (fig. 5); each of these two joints bears a single seta; the much smaller basal joint has four or five small cilia. In the female (fig. 3) the basal joint is not at all striated, and the relative lengths of joints of

the natatory branch (fig. 3) are as follows: $\frac{1.2.3.4.5.6.7.8.9}{20\ 3\ 3\ 1\frac{1}{2}\ 1\frac{1}{2}\ 1\frac{1}{2}\ 1\frac{1}{2}\ 1\frac{1}{2}\ 1\frac{1}{2}}$; the setæ attached to the second, third, fourth, and fifth joints are extremely short, equal in length, and are armed with short stout spines along their outer margins (figs. 3, 4); the setæ of the last four joints are from three to four times as long as the preceding and are not spinous; secondary branch simple, curved, one-jointed. The mandibular foot is four-jointed, and is in the male (fig. 7) devoid of any masticatory process, but bears numerous simple setæ; in the female the first joint bears a bifid process, and the second has, in addition to several simple setæ, a small bisetose finger-like process at its distal end (fig. 8). The first maxilla (fig. 6) consists of one stout principal lobe with four smaller lobes, all of which are setiferous, most of the stouter setæ having one of the margins strongly denticulated: the principal lobe is two-jointed, the last joint small and giving attachment to about six apical setæ, which are graduated in size from the first to the last and bear strong marginal teeth. The vermiform limb has a single claw-like process at its apex. Caudal laminae (fig. 10) short; the first three marginal appendages consisting of very short slender setæ, the fourth an unguiform spine about twice as long as the preceding setæ and very much stouter; then follows another small seta, then a second stout unguis about twice as long as the first, and lastly a third unguis which is more than twice as long as the second. Eyes small, deep red, the lenses irregularly placed and of very unequal size; in the male subreniform (fig. 11), in the female smaller and globose.

My first description of this genus was deficient in any account of the soft parts of the animal, but I have recently by careful maceration of some of the dried shells been able to obtain preparations which show, though imperfectly, some of the more important structures. These are certainly sufficiently characteristic, and even apart from the shell would constitute a valid generic distinction.

The specimens were obtained from various localities among the South Sea Islands.

Genus Sarsiella, Norman.

SARSIELLA SCULPTA, G. S. Brady. (Plate XVII. figs. 12, 13.)

1888. *Sarsiella sculpta*, G. S. Brady, "Ostracoda collected in the South Sea Islands," Trans. Roy. Soc. Edinb. vol. xxxv. p. 517, pl. i. figs. 17-20.

The original description of this species was taken from the shell only, but I have recently succeeded in finding remains of the soft parts in a specimen taken by the 'Challenger,' and from it I have here figured the end of the vermiform foot and one of the caudal laminae. These, it will be seen, exactly agree with *Sarsiella*.

The 'Challenger' specimen was taken at a depth of 7 fathoms in Flinders Passage.

SARSIELLA SIMPLEX, G. S. Brady. (Plate XVII. figs. 16-19)

1888. *Sarsiella simplex*, G. S. Brady, "Ostracoda collected in the South Sea Islands," Trans. Roy. Soc. Edinb. vol. xxxv. p. 516, pl. iv. figs. 15, 16.

One specimen was taken by the 'Challenger' Expedition in the tow-net off Cape Howe, Australia, at night.

SARSIELLA ROBUSTA (G. S. Brady). (Plate XVII. figs. 14, 15.)

1888. *Pleoschisma robusta* ♂, G. S. Brady, "Ostracoda collected in the South Sea Islands," Trans. Roy. Soc. Edinb. vol. xxxv. p. 513, pl. iv. figs. 13, 14.

Further examination of the dried shells of this species has revealed portions of the limbs, which show that it must be referred to the genus *Sarsiella*. The antennules (fig. 14) are provided with the dense fascicle of hairs which has been described by Dr. G. W. Müller as characteristic of the male *Sarsiella*, and also by Dr. Norman and myself under the genus *Nematohamma*.

Genus EURYPYLUS, G. S. Brady.

EURYPYLUS PETROSUS, G. S. Brady. (Plate XVI. figs. 25, 26.)

1870. *Eurypylus petrosus*, G. S. Brady, Les Fonds de la Mer, tome i. p. 141, pl. xviii. figs. 1, 2.

The type specimen of this species remains as yet the only one which has been seen. It was described from the shell only, and inasmuch as other very nearly allied forms belonging to the genera *Sarsiella* and *Pleoschisma* have since been published, I thought it well to sacrifice the shell for the sake of examining the contained animal, of which, unfortunately, I succeeded in obtaining fragments only. The mandibular foot (fig. 25) and caudal lamina (fig. 26) are here figured. The former, it will be seen, is very similar to that of *Sarsiella*; the latter to that of *Pleoschisma*. The differences are in fact quite sufficient to indicate three distinct genera.

The type of *Eurypylus* was taken off St. Vincent (Cape Verd).

Family HALOCYPRIDÆ.

Of many of the species belonging to this group I have seen only imperfect examples, and cannot, therefore, figure or describe them satisfactorily. They have, however, been fully illustrated by Dr. Claus in his works on the Atlantic and Mediterranean Halocypridæ. Some of the new genera proposed by Dr. Claus seem to me to be based on trivial and insufficient characters, and are adopted here only as a temporary expedient.

The most interesting point in connexion with the specimens here noted is the confirmation which they afford to the generally accepted idea of the almost cosmopolitan distribution of many pelagic animals. With one exception they are referable to species already described by Dr. Claus from the North Atlantic and Mediterranean, whereas the 'Challenger' specimens are mostly from the Pacific and Australasian areas.

Genus CONCHÆCIA, Dana (in part).

CONCHÆCIA BISPINOSA, Claus.

1890. *Conchæcia bispinosa*, Claus, Die Gattungen und Arten der mediterranen und atlantischen Halocypriden, p. 10.

1891. „ „ Claus, Die Halocypriden des atlantischen Oceans und Mittelmeeres, p. 59, pl. v., pl. vi. fig. 1, pl. viii. figs. 7, 8.

Taken in the tow-net during the 'Challenger' Expedition: lat. 32° 41' N., long. 36° 6' W.; and in lat. 36° 32' S., long. 132° 52' W.

Genus PARACONCHÆCIA, Claus.

PARACONCHÆCIA OBLONGA, Claus. (Plate XVII. figs. 20, 21.)

1890. *Paraconchæcia oblonga*, Claus, Die Gattung. und Arten der medit. und atlant. Halocypr. p. 13.

1891. „ „ Claus, Die Halocypr. des atlant. Oceans und Mittelmeeres, p. 63, pl. viii. figs. 10, 11, pl. ix.

Hab. Off Kandabu, Fiji; and in lat. 46° 46' S., long. 45° 31' E. (St. 146, 'Challenger'). The specimens described by Dr. Claus were from lat. 37° 45' N., long. 13° 38' W., depth 1500 metres; and from lat. 34° 18' N., long. 15° 34' W., depth 1000 metres. I have no record of the depth at which the 'Challenger' specimens were taken.

Genus CONCHÆCETTA, Claus.

CONCHÆCETTA ACUMINATA (?), Claus.

1890. *Conchæcetta acuminata*, Claus, Die Gattung. und Arten der medit. und atlant. Halocypr. p. 16.

1891. „ „ Claus, Die Halocypr. des atlant. Oceans und Mittelmeeres, p. 67 pl. xiii., xiv.

A single specimen, apparently belonging to the young of this species, was found in a 'Challenger' gathering from the neighbourhood of the Philippine Islands.

Genus CONCHÆCILLA, Claus.

CONCHÆCILLA DAPHNOIDES, Claus.

1890. *Conchæcilla daphnoides*, Claus, Die Gattungen und Arten der mediterranen und atlantischen Halocypriden, p. 18.

1891. „ „ Claus, Die Halocypriden des atlantischen Oceans und Mittelmeeres, p. 68, pl. xv.

One specimen from a gathering made by the 'Challenger' Expedition off Kandabu, Fiji.

Genus CONCHÆCISSA, Claus.

CONCHÆCISSA IMBRICATA, G. S. Brady.

1880. *Halocypris imbricata*, G. S. Brady, Report on the Ostracoda of the 'Challenger' Expedition, p. 167.
1890. *Conchæcissa armata*, Claus, Die Gattungen und Arten der mediterranen und atlantischen Halocypriden, pp. 19, 20.
1891. „ „ Claus, Die Halocypriden des atlantischen Oceans und Mittelmeeres, p. 70, pl. xvi., xvii., xviii.

This is referred doubtfully by Dr. Claus to his more recently described species, *Conchæcissa armata*, and, notwithstanding the slight discrepancies referred to by that author, I can scarcely doubt that the two are identical.

Genus PSEUDOCONCHÆCIA, Claus.

PSEUDOCONCHÆCIA SERRULATA, Claus. (Plate XVII. figs. 22-24.)

1874. *Conchæcia serrulata*, Claus, Die Familie der Halocypriden, p. 61, pl. i. figs. 2-7, 9-11, pl. ii. figs. 12, 13, 17, 19.
1880. *Halocypris atlantica*, Brady, Report on the Ostracoda of the 'Challenger' Expedition, p. 164, pl. xi. figs. 1-15, pl. xli. figs. 11, 12.
1890. *Pseudoconchæcia serrulata*, Claus, Die Gattungen und Arten der mediterranen und atlantischen Halocypriden, p. 20.
1891. „ „ Claus, Die Halocypriden des atlantischen Oceans und Mittelmeeres, p. 72, pl. xix. figs. 1-14, pl. xxiii. figs. 1-13.

The reference of this species in the Report of the 'Challenger Expedition' to *Halocypris atlantica*, Lubbock, can scarcely be maintained, though the figures and description there given are, I think, correct so far as they go. The descriptions, both of Dana and Sir John Lubbock, are so concise and vague that it is impossible to say certainly to what they refer. There can, however, be no doubt that *Pseudoconchæcia serrulata*, Claus, is identical with *Halocypris atlantica* of the 'Challenger' Report. Some characters which were passed without notice in that Report I figure here—the hooked appendage of the right and left male antenna (figs. 23, 24) and the swimming-setæ of the same limb (fig. 22). These setæ are figured in order to show their narrowly lanceolated or spathulate extremities. All the setæ seem to end in this way, but the two springing from the apical joint much more distinctly so than the rest: in fact, it is not easy to see the slightly dilated apices of the lateral setæ except by rotating them so as to get a front view. But although it was in *P. serrulata* that I first noticed the dilated apices, I now find on closer investigation that the antennal setæ of other species (perhaps, indeed, of all the Halocypridæ) have a similar structure. This point is noted (though not figured) by Prof. Claus in his definition of the subfamily Conchæcinæ. There seems to be no such structure in the setæ of the Cypridinidæ.

P. serrulata occurred in many of the 'Challenger' gatherings. Those which I have

been able to verify since recognizing the identity of the specimens are as follows:—Surface-net between Api and Cape York and off Port Jackson; in tow-net at 30 fathoms, South Atlantic, lat $42^{\circ} 32' S.$, long. $56^{\circ} 27' W.$; and in lat. $35^{\circ} 41' N.$, long. $159^{\circ} 41' E.$

Genus MICROCONCHÆCIA, Claus.

MICROCONCHÆCIA CLAUSII (G. O. Sars).

1887. *Halocypris clausii*, G. O. Sars, Nye Bidrag til Kundskaben om Middelhavets Invertebrat-fauna, iv. Ostracoda Mediterranea, p. 87, pl. xi. figs. 7–10, pl. xiv. figs. 6–18.
1890. „ „ Claus, Die Gattungen und Arten der mediterranen und atlantischen Halocypriden, p. 22.
1891. *Mikroconchæcia clausii*, Claus, Die Halocypriden des atlantischen Oceans und Mittelmeeres, p. 73, pl. xx.

The only 'Challenger' gathering in which this species had been detected was from the surface-net off Kandabu, Fiji, where it occurred in considerable abundance.

Genus HALOCYPRIS, Dana.

HALOCYPRIS CONCHA, Claus.

1874. *Halocypris concha*, Claus, Die Familie der Halocypriden, pl. ii. figs. 20–25, pl. iii. figs. 26–35.
1891. „ „ Claus, Die Halocypriden des atlantischen Oceans und Mittelmeeres, p. 77, pl. viii. fig. 12, pl. xi. figs. 6, 7, pl. xxii. figs. 1–12, pl. xxvi. fig. 11.

In a 'Challenger' surface-net gathering from the North Atlantic: lat. $26^{\circ} 21' N.$, long. $33^{\circ} 37' W.$

HALOCYPRIS PELAGICA, Claus.

1890. *Halocypris pelagica*, Claus, Die Gattungen und Arten der Halocypriden, p. 25.
1891. „ „ Claus, Die Halocypriden des atlantischen Oceans und Mittelmeeres, p. 78, pl. xxi. figs. 1–11.

In two surface-net gatherings from the 'Challenger': lat. $35^{\circ} 18' N.$, long. $144^{\circ} 8' E.$; and lat. $35^{\circ} 41' N.$, long. $157^{\circ} 41' E.$

Genus HALOCYPRIA, Claus.

HALOCYPRIA GLOBOSA, Claus.

1890. *Halocypria globosa*, Claus, Die Gattungen und Arten der mediterranen und atlantischen Halocypriden, p. 25.
1891. „ „ Claus, Die Halocypriden des atlantischen Oceans und Mittelmeeres, p. 79, pl. xxii. figs. 13–18.

In the surface-net between Api and Cape York, and in lat. $36^{\circ} 32' S.$, long. $132^{\circ} 52' W.$ ('Challenger').

EXPLANATION OF THE PLATES.

PLATE XV.

Cyclasterope hendersoni, ♀ (p. 86).

- Fig. 1. Shell seen from right side, }
 Fig. 2. „ „ above, } × 8.
 Fig. 3. Frontal tentacle.
 Fig. 4. Secondary branch of antenna.
 Fig. 5. Mandibular foot.
 Fig. 6. Falciform process of mandible.
 Figs. 7, 8. End and side of falciform process, more highly magnified.
 Fig. 9. End of vermiform limb.
 Fig. 10. Segments of the same with setæ.
 Fig. 11. Caudal lamina.
 Fig. 12. „ „ spines of unguis.

Cyclasterope orbicularis, ♀ (p. 87).

- Fig. 13. Outline of shell seen from left side, }
 Fig. 14. „ „ above, } × 20.
 Fig. 15. Frontal tentacle.
 Fig. 16. Secondary branch of antenna.
 Fig. 17. Mandibular foot.
 Fig. 18. Maxilla of first pair: (a) terminal process of same.
 Fig. 19. Caudal lamina.

Cypridina (?) *armata* (p. 89).

- Fig. 20. Shell seen from left side, }
 Fig. 21. „ „ above, } × 40.

PLATE XVI.

Cypridina castanea, ♀ (p. 88).

- Fig. 1. Supero-anteal margin of left valve.
 Fig. 2. Mandibular foot.
 Fig. 3. Masticatory lobe of first maxilla.
 Fig. 4. Caudal lamina.

Cypridina punctata (p. 89).

- Fig. 5. Outline of shell, $\times 40$.
 Fig. 6. „ rostrum of right valve.
 Fig. 7. End of mandibular foot.
 Fig. 8. Masticatory process of the same.
 Fig. 9. Caudal lamina.

Cypridina (?) squamosa (p. 90).

- Fig. 10. Shell seen from right side, $\times 50$.
 Fig. 11. Portion of shell with sculpture.
 Fig. 12. Caudal lamina.

Philomedes agilis, ♀ (p. 90).

- Fig. 13. Shell seen from left side, $\times 40$.
 Fig. 14. Secondary branch of antenna.
 Fig. 15. Apex of vermiform foot.
 Fig. 16. Caudal lamina.

Philomedes corrugata (p. 91).

- Fig. 17. Shell of female seen from right side,
 Fig. 18. „ „ above (Flinders Passage), } $\times 40$.
 Fig. 19. Secondary branch of antenna, ♂.
 Fig. 20. Caudal lamina.
 Fig. 21. Outline of shell (Port Jackson).

Cypridina bairdi (p. 88).

- Fig. 22. Outline of right valve in region of notch.
 Fig. 23. Outline of left valve.

Cypridina danæ (p. 89).

- Fig. 24. End of vermiform foot.

Eurypylus petrosus (p. 94).

- Fig. 25. Mandibular foot.
 Fig. 26. Caudal lamina.

PLATE XVII.

Pleoschisma moroides (p. 92).

- Fig. 1. Apical joints of antennule, ♂ .
 Fig. 2. Antenna, ♂ (imperfect).
 Fig. 3. „ ♀ .
 Fig. 4. „ one of the short setæ more highly magnified.
 Fig. 5. „ secondary branch, ♂ .
 Fig. 6. First maxilla.
 Fig. 7. Mandible, ♂ .
 Fig. 8. Mandible, ♀ .
 Fig. 9. End of vermiform foot.
 Fig. 10. Caudal lamina.
 Fig. 11. Eye, ♂ .

Sarsiella sculpta (p. 93).

- Fig. 12. End of vermiform foot.
 Fig. 13. Caudal lamina.

Sarsiella robusta, ♂ (p. 94).

- Fig. 14. Antennule.
 Fig. 15. Secondary branch of antenna.

Sarsiella simplex, ♀ (p. 94).

- Fig. 16. Shell seen from right side, }
 Fig. 17. „ „ above, } × 80.
 Fig. 18. First maxilla.
 Fig. 19. Caudal lamina.

Paraconchæcia oblonga, ♂ (p. 95).

- Fig. 20. Shell seen from left side, × 40.
 Fig. 21. Anterior margin of shell.

Pseudoconchæcia serrulata, ♂ (p. 96).

- Fig. 22. Natatory branch of antenna.
 Fig. 23. Secondary branch of right antenna.
 Fig. 24. „ „ left „